A. A Generic Model for ISDN Cost Analysis

1. Introduction

Value to a user is usually considered in relation to the cost incurred in receiving a benefit. In evaluating the use of ISDN in a business setting, users should compare the costs and benefits of their present method of operation with ISDN and other alternative solutions. The users will then be empowered to fiscally decide whether ISDN makes sense for their particular situations.

To assist in this decision, the NIUF has prepared a set of guidelines to aid users in understanding the costs and benefits associated with a solution involving ISDN. These guidelines are based on work done by a team of members of the NIUF from March, 1990 to October, 1992. This team was comprised of members from multiple companies and represented the Issues group. This effort centered on an identification of the categories of application cost elements and pro forma business expenses.

In general, the break-even number of users is higher for new ISDN systems than for add-on applications—although that break-even point has not been determined. Similarly, the benefits of an ISDN BRI line generally increase as more applications are serviced by a single BRI. Break-even costs will vary as a function of installation costs and savings per application. Users are encouraged to analyze their individual applications based upon their unique costs and benefits and work with their tariff coordinators in each LEC to determine which costs would apply. Users should also incorporate cost/benefit elements over a realistic system life cycle, typically five to seven years, to obtain an accurate view of lifetime system costs.

2. Checklist for Cost Analysis Elements

A checklist has been developed which indicates the general elements which should be considered, in these categories: hard and soft dollar benefits, costs eliminated or avoided, costs of ISDN, and soft benefits. Users are encouraged to quantify "soft" dollar savings as well as actual costs and benefits of ISDN. While these checklists include the typical costs and benefits associated with ISDN, users should consider their particular implementation and situation to include all other potential costs and savings. Since multiple applications will greatly increase the cost/performance ratio, users should determine the incremental costs/benefits of add-on applications, as well as the ratio for the initial application. The checklists shown in table 7-2 indicate potential costs and benefits of ISDN.

3. Cost Analysis Spreadsheet—Generic Model

A generic spreadsheet has been developed based on the NIUF checklists which incorporates elements of standard financial analysis. This spreadsheet is written in Microsoft Excel for Apple Macintosh PCs, but could be adapted to any spreadsheet package such as Lotus 1-2-3, Dbase IV, etc. Users should perform this analysis for both the present method of operation and all proposed system options, including ISDN, to obtain the most accurate view of the incremental costs and benefits of ISDN. This spreadsheet is shown in table 7-4.

Similar models have been developed by AT&T Bell Labs, Jet Propulsion Labs, Kodak, and Southwestern Bell. These models are described briefly in figures 7-2, 7-3, and 7-4. For more information, contact the users cited in these models.

Table Table I. Cost Analysis Elements Checklist

ISDN Cost/Benefit Checklist

Hard/Soft Benefits	Costs of ISDN (including one-time, monthly)
Faster data rates within an organization	Wiring, including connectors
Faster data rates to outside organizations	Wiring design and certification
New telephone set functions	Contract termination charges
Access to packet data transfer	Network termination equipment (NT-1s, etc.)
Transparent PBX/ACD networking	Telephone sets
ANI from public network	Other CPE (TAs, etc.)
ANI from internal users	Telecom management training
Faster call set-up	Telecom technician training
New applications	Console attendant training
Reduced time in call answer/forward	User training
Increased call completions	Basic service charges
Reduced queueing	Usage fees
Reduced agent keystroke time	Installation charges
Faster information access	Special services charges (tie trunks, etc.)
Increased customer satisfaction	Management time
Faster service/improved accuracy	Consulting fees
Reduced time/dollars required for travel	Legal fees
Improved productivity	Cost of capital
Network-wide call management service	Cost of space

Costs Eliminated/Avoided

Service charges	Environmental costs
Equipment	Electrical
Cabling	Maintenance
Salaries	Moves and changes
Floor space	Long distance costs

Table Table II. A Generic Model for ISDN Cost Analysis

	A	B	C
1			
2			
3	**Benefits:**		
4	Faster data rates within the base infrastructure		
5	Faster data rates outside the base infrastructure		
6	New telephone set functions		
7	Access to packet data transfer		
8	Transparent switch/Automatic Call Distribution (ACD)		
9	Automatic Number Identification (ANI) from FTS2000 or the Public Network		
10	ANI from internal users		
11	Faster call set up		
12	New applications		
13	Reduced time in call answer/forward		
14	Increased call completions		
15	Reduced queueing		
16	Reduced agent keystroke time		
17	Faster information access		
18	Increased customer satisfaction		
19	Faster service/improved accuracy		
20	Reduced time/dollars required for travel		
21	Improved productivity		
22	Network-wide call management service		
23	**Assumptions/Variables**	**Monthly:**	
24	· *Estimated increase in productivity (%)*		
25	· *Number of affected workers*		
26	· *Average cost per worker/hour*		
27	**Total Monthly Productivity Enhancement Benefits:**	$0	
28	· *Amortization period for One-Time Costs*		months
29			
30			

	A	B	C
31			
32			
33			
34	**Costs Eliminated/Avoided:**	**Monthly:**	
35	· *Service charges*		
36	· *Equipment*		
37	· *Cabling*		
38	· *Salaries*		
39	· *Floor Space*		
40	· *Environmental*		
41	· *Electrical*		
42	· *Maintenance*		
43	· *Moves and changes*		
44			